REMARKS

In view of the following remarks, the Examiner is requested to withdraw the rejections and allow Claims 1, 2, 4-10, 12-28 and 35-39, the only claims pending and currently under examination in this application.

Claim Rejections - 35 U.S.C. § 102

Claims 1, 2, 4, 6-10, 12, 13, 15-18, 20, 21, and 35-38 have been rejected under 35 U.S.C. § 102(a) and 35 U.S.C. § 102(e) as allegedly being anticipated by Caren et al. (U.S. 6,221,653; 04/24/2001; filing date 4/27/1999).

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

An element of the rejected claims is depositing a quantity of a fluid containing a protein reagent onto the surface of a substrate, in a manner that retains the deposited reagent's functionality. A reagent is defined as follows: "a substance used in a chemical reaction to detect, measure, examine, or produce other substances." (American Heritage Dictionary.)

In contrast, Caren (6,221,653) is directed to deposition of sample, not reagent, on an array. The deposition of sample on an array in Caren '653 is for detection of the presence of an analyte in a sample. As described in the specification, "[T]he fluid sample that is deposited on the array according to the subject invention is a fluid sample that is suspected of containing an analyte of interest. In other words, the fluid sample may or may not actually contain the analyte of interest, where the purpose of the array-based assays in which the methods of the subject invention find use is to determine whether or not the sample has the analyte of interest." [col. 4, lines 10-17]. A sample to be assayed is not a protein reagent as claimed.

The Examiner asserts that "Caren, et al, throughout the patent, teach a method for depositing a quantity of fluid containing a plurality of binding agents onto

a substrate surface (such as an array) (e.g. Claims 1 and 6 of the reference)." [Office Action, p. 4]

The Applicants respectfully submit that the Examiner's reading of Claims 1 and 6 of Caren '653 is incorrect. Claim 1 of Caren '653 reads as follows:

> Claim 1. A method for depositing a quantity of fluid on a substrate surface having a plurality of binding agents stably associated therewith, said method comprising....

The Applicants assert that Claim 1 clearly refers to a substrate that has a "plurality of binding agents stably associated therewith", not a "quantity of fluid containing a plurality of binding agents" as the Examiner suggests.

Similarly, Claim 6 of Caren '653 reads as follows:

> Claim 6. A method for depositing a quantity of fluid on an array surface having a plurality of biomolecules stably associated therewith, said method comprising....

The Applicants again assert that Claim 6 refers to a substrate that has a "plurality of biomolecules stably associated therewith", not a quantity of fluid containing a plurality of biomolecules, as the Examiner suggests.

The Examiner also alleges that "the reference further teaches the deposit fluid comprises binding agents (a member of a specific binding pair) such as proteins, enzymes and cell lysates (containing essentially protein mixtures) (e.g. Claim 3; Column 2, lines 28+; col. 4 lines 27+) which reads on the protein reagent of clms 1, 7, 8, 12, 17, 22, 24, 25, and 36, 38." [Office Action, p. 6].

However, the above cited sections by the Examiner demonstrate that the fluid sample in Caren '653 is one that is suspected of containing an analyte of interest; i.e., a fluid sample that may or may not actually contain the analyte of interest. It is not a protein reagent as claimed.

Nowhere does Caren '653 disclose deposition of a protein reagent onto a substrate; i.e., a substance used in a chemical reaction to detect, measure, examine, or produce other substances, in a manner that maintains said reagent's functionality.

Accordingly, Caren '653 does not anticipate the claims under 35 U.S.C. § 102(a) or (e) and this rejection should be withdrawn.

Claims 1, 2, 4, 6-10, 12, 13, 15-18, 20, 21, and 35-38 have been rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Caren et al. (U.S. 6,797,469 B2, 09/28/2004; filed 3/26/2001).

As reviewed above, an element of the rejected claims is depositing a quantity of a fluid containing a protein reagent onto the surface of a substrate, in a manner that retains the reagent's functionality.

Caren (6,797,469) is directed to deposition of sample, not reagent, on an array. The deposition of sample on an array in Caren '469 is for detection of the presence of an analyte in a sample; specifically a nucleic acid. As described in the specification, "[T]he fluid sample that is deposited on the array according to the subject invention is a fluid sample that is suspected of containing an analyte of interest. " [col. 4, lines 14-16].

The Examiner asserts that "[t]he reference further teaches the deposit fluid comprises binding agents (a member of a specific binding pair) such as proteins and (e.g. Claim 19; Column 2, lines 31+; col. 4 lines 33+,) which reads on the protein reagent of clms 1, 7, 8, 12, 17, 22, 24, 25, and 36-38." [Office Action, p. 8].

Claim 19 of Caren '469 is directed to "a method for depositing a quantity of fluid containing a nucleic acid or polypeptide onto an array surface having a plurality of nucleic acids or polypeptides stably associated therewith...."

The Applicants assert that the "quantity of fluid containing a nucleic acid or polypeptide" in Caren '469 is again a sample fluid. "[T]he fluid sample that is deposited on the array according to the subject invention is a fluid sample that is suspected of containing an analyte of interest. " [col. 4, lines 14-16]

This teaching is in contrast to the Applicants' present invention, in which the protein in the fluid deposited onto the substrate is a reagent.

As above, the Examiner also cites Column 2, lines 31+, and col. 4, lines 33+ of Caren '469.

However, the cited portions of Caren '469 are directed to screening a fluid sample at least suspected of containing a nucleic acid on an array. The fluid sample in Caren '469 is one that is suspected of containing an analyte of interest; i.e., a fluid sample that may or may not actually contain the analyte of interest.

Nowhere does Caren '469 disclose deposition of a protein reagent onto a substrate; i.e., a substance used in a chemical reaction to detect, measure, examine, or produce other substances, in a manner that maintains the reagent's functionality.

Because a claim is anticipated only if each and every element is found in a single prior art reference, Caren '469 does not anticipate the current claims. Therefore, the rejection under 35 U.S.C. § 102(e) of Claims 1, 2, 4, 6-10, 12, 13, 15-18, 20, 21, and 35-38 as being anticipated by Caren '469 may be withdrawn.

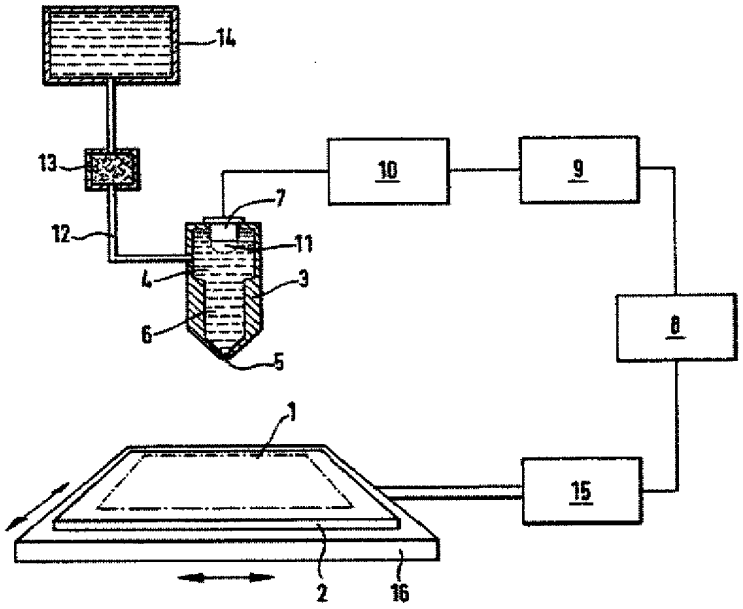
Claim Rejections - 35 U.S.C. § 103

Claims 1, 2, 4-10, 12-28, and 35-39 have been rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by, or alternatively, under 35 U.S.C. § 103(a) as obvious over Deeg et al. (U.S.P.N. 5,338,688; 08/16/1994).

As reviewed above, an element of the rejected claims is front loading a fluid into an inkjet head by contacting an orifice with the fluid in a manner so that the fluid flows through the orifice and into a firing chamber.

The Applicants contend that Deeg does not disclose the front loading of a fluid into an inkjet head. The methods disclosed by Deeg describe a traditional use of inkjet heads, where the fluid comes from a reservoir into the firing chamber, and therefore fluid does not go from the orifice into the firing chamber. The Applicants contend that nowhere does Deeg teach front loading a fluid into an inkjet head by contacting an orifice with the fluid in a manner so that the fluid flows through the orifice and into a firing chamber.

Deeg discloses the apparatus set forth in Fig. 1, below. As can be seen with reference to Fig. 1, element 3 represents the jet head, element 4 represents the jet chamber and element 14 represents a reservoir containing an analytical fluid 6 to be delivered to the surface of the substrate. Reservoir 14 is connected to jet chamber 4 via line 12, which is intersected by filter 13.



Deeg discloses that prior to printing, the analytical fluid 6 is delivered from the reservoir 14 to the jet chamber 4 wherein the fluid is heated by element 7 and ejected via orifice 5. Because the analytical fluid is delivered to the jet head 3 from the reservoir 14 via line 12, it is clear that the jet head 3 is not front loaded by contacting an orifice with the fluid in a manner so that the fluid flows through the orifice and into a firing chamber. If the Deeg apparatus were meant to be front loaded there would be no purpose for line 12, filter 13 and reservoir 14.

Therefore, as can be seen with reference to the above, Deeg does not teach front loading a fluid into an inkjet head, nor does it teach front loading the inkjet head by contacting an orifice with the fluid in a manner so that the fluid flows through the orifice and into a firing chamber.

The Examiner, however, alleges that "Although the '688 patent does not explicitly teach the step of "front loading said quantity of fluid into a thermal inkjet head....", the claimed thermal inkjet head inherently performs "front loading" process. See MPEP 2112.02:"

> "Under the principles of inherency, if a prior art device, in its normal and usual operation, would necessarily perform the method claimed, then the method claimed will be considered to be anticipated by the prior art device. When the prior art device is the same as a device described in the specification for carrying out the claimed method, it can be assumed the device will inherently perform the claimed process." *In re King*, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986) [p. 9-10, Final Office Action 8-22-07].

The Office further asserts that "whenever the inkjet head orifice, in its normal and usual operation, is in contact with a fluid, the inherent function of capillary suction (or "front loading") is necessarily performed by the inkjet head." [Office Action p. 11, emphasis original].

However, the Applicants argue that the inkjet head orifice of Deeg, in its normal and usual operation, does not necessarily perform the "inherent function of capillary suction" when in contact with a fluid. The inkjet orifice of Deeg does not necessarily perform the "inherent function of capillary suction" because the "normal and usual operation" of Deeg is to load analytical liquid into "disposable jet units" (i.e., cartridges) "which contain the analytical liquid (especially reagents or calibrating liquids) in prepacked form" which are then associated with the inkjet head [column 2, lines 22 to 25].

The 'normal and usual operation' of the method disclosed in Deeg is the use of an "ink jet printing head working on the bubble jet principle" [col. 6, lines 58-59]. Deeg states that the advantages of such a method include the ability "economically to manufacture disposable jet units which contain the analytical liquid (especially reagents or calibrating liquids) in prepacked form." [col. 2, lines 22-25]. and "..a particular

advantage of the invention is that it is possible to manufacture a jet unit at such a favorable cost that it can be designed as a disposable element containing a supply of analytical liquid ready for use (prepacked by the manufacturer)." [col. 4, lines 5-9]

From the above, it is clear that does Deeg not teach front loading of fluid into the inkjet head, but instead teaches the use of "disposable jet units" (i.e. cartridges) in "prepacked form". Nowhere does Deeg teach front loading of a fluid into an inkjet head.

Furthermore, a front loading method would not allow for the use of the 'prepacked disposable units' as disclosed in Deeg. As such, Deeg also doe snot suggest the frontloading step of the claimed methods.

Therefore, in view of the above arguments, the Applicants respectfully request that both the 35 U.S.C. § 102(b) rejection and the 35 U.S.C. § 103(a) rejection of Claims 1, 2, 4-10, 12-28, and 35 over Deeg et al. (U.S.P.N. 5,338,688) be withdrawn.

Double Patenting

Claims 1, 2, 9 and 11 have been rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 19-21 and 23 of USPN 6,797,469. An element of the rejected claims include a method for depositing a quantity of a fluid containing a protein reagent onto the surface of a substrate. A reagent is defined as a substance used to detect, measure, examine, or produce other substances. (see reference cited, *supra*) Because Caren '469 does not disclose deposition of a protein reagent onto a substrate, the Applicants contend the requirements for a nonstatutory obviousness-type double-patenting rejection have not been met. Therefore, the Applicants respectfully request that the nonstatutory obviousness-type double-patenting rejection of Claims 1, 2, 9 and 11 be withdrawn.

Claims 1, 2, and 9 have been rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 1, 3, 5-7, 9, 10, 12, 17, and 19 of USPN 6,221,653. An element of the rejected claims include a method for depositing a quantity of a fluid containing a protein reagent onto the surface of a substrate, in manner that retains the reagent's functionality. A reagent is defined as follows: "a substance used in a chemical reaction to detect, measure, examine, or produce other substances." (American Heritage Dictionary.) In contrast, the claims of Caren '653 are directed to deposition of fluid sample on an array. The deposition of sample on an array in Caren '653 is for detection of the presence of an analyte in a sample. The claims of Caren '653 do not specifically disclose deposition of a reagent, where the reagent retains functionality. Accordingly, the Applicants contend that Caren '653 does not meet the requirements for a nonstatutory obviousness-type double-patenting rejection, because Caren '653 is directed to deposition of sample on an array that contains binding agents. Therefore, the Applicants respectfully request that the nonstatutory obviousness-type double-patenting rejection of Claims 1, 2, and 9 be withdrawn.

Claims 1, 2, 9, and 11 have been rejected on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over Claims 1, 5, 9, 11-13, 15, and 18 of USPN 6,656,740. An element of the rejected claims include a method for depositing a quantity of a fluid containing a protein reagent onto the surface of a substrate, in manner that retains the reagent's functionality. The Examiner states that the Applicants have not given a specific reason for the assertion that the requirements for a nonstatutory obviousness-type double-patenting rejection have not been met. [Final Office Action, p. 16] The Applicants again assert that the claims of Caren '740 are directed to a method of fabricating an array of biopolymers by in situ synthesis. In other words, Caren '740 is directed to fabricating, i.e., "building" a feature or "spot" on an array using an in-situ method. Multiple iterative steps are performed in order to form the final 'features' on the array. This is in contrast to the current claims, in which a protein reagent is deposited in a manner that maintains the reagent's functionality. That is, an entire protein reagent is deposited onto the surface of a substrate in a functional form. This is clearly distinguished from a method of building a biopolymer through a multiple step process until a final feature

or spot on an array is created. Accordingly, the Applicants contend that the requirements for a nonstatutory obviousness-type double-patenting rejection have not been met. Therefore, the Applicants respectfully request that the nonstatutory obviousness-type double-patenting rejection of Claims 1, 2, and 9 be withdrawn.

Claims 1, 2, 6, 7, and 8 have been rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 1-5, 7, and 11-19 of USPN 6,323,043 and claims 1, 2, 4, and 6 of related USPN 6,884,580. An element of the rejected claims include a method for depositing a quantity of a fluid containing a protein reagent onto the surface of a substrate, in manner that retains the reagent's functionality. The claims of Caren '043 and related application '580 are directed to a method of fabricating an array of biopolymers by in situ synthesis.The Examiner states that the Applicants have not given a specific reason for the assertion that the requirements for a nonstatutory obviousness-type double-patenting rejection have not been met. [Final Office Action, p. 17]. The Applicants again assert that the claims of Caren '043 and Caren '580 are directed to a method of fabricating an array of biopolymers by in situ synthesis. In other words, Caren '043 and Caren '580 are directed to fabricating, i.e., "building" a feature or "spot" on an array using an in-situ method. Multiple iterative steps are performed in order to form the final features on the array. This is in contrast to the current claims, in which a protein reagent is deposited in a manner that maintains the reagent's functionality. That is, an entire protein reagent is deposited onto the surface of a substrate in a functional form. This is clearly distinguished from a method of building a biopolymer through a multiple step process until a final feature or spot on an array is created. Accordingly, the Applicants contend that the requirements for a nonstatutory obviousness-type double-patenting rejection have not been met. Therefore, the Applicants respectfully request that the nonstatutory obviousness-type double-patenting rejection of Claims 1, 2, 6, 7, and 8 be withdrawn.

Claims 1-4 have been rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 1, 3, 8, 12, 14, 15, and 18 of USPN 6,242,266. An element of the rejected claims include a method for depositing a quantity of a fluid containing a protein reagent onto the surface of a

substrate, in manner that retains the reagent's functionality. The claims of Schleifer '266 are directed to a method of fabricating an array of biopolymers by in situ synthesis. The Examiner states that the Applicants have not given a specific reason for the assertion that the requirements for a nonstatutory obviousness-type double-patenting rejection have not been met. [Final Office Action, p. 17]. The Applicants again assert that the claims of Schleifer '266 are directed to a method of fabricating an array of biopolymers by in situ synthesis. In other words, Schleifer '266 is directed to fabricating, i.e., "building" a feature or "spot" on an array using an in-situ method, Multiple iterative steps are performed in order to form the final features on the array. This is in contrast to the current claims, in which a protein reagent is deposited in a manner that maintains the reagent's functionality. That is, an entire protein reagent is deposited onto the surface of a substrate in a functional form. This is clearly distinguished from a method of building a biopolymer through a multiple step process until a final feature or spot on an array is created. Accordingly, the Applicants contend that the requirements for a nonstatutory obviousness-type double-patenting rejection have not been met. Therefore, the Applicants respectfully request that the nonstatutory obviousness-type double-patenting rejection of Claims 1, 3, 8, 12, 14, 15, and 18 be withdrawn.

CONCLUSION

In view of the amendments and remarks above, the Applicants respectfully submit that all of the claims are in condition for allowance, which action is requested. If the Examiner finds that a telephone conference would expedite the prosecution of this application, please telephone Bret Field at (650) 327-3400.

The Commissioner is hereby authorized to charge any additional fees under 37 C.F.R. §§ 1.16 and 1.17 which may be required by this paper, or to credit any overpayment, to Deposit Account No. 50-1078, order number 10991398-1.

Respectfully submitted,

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